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EXAMINER	
PHUONG, DAI	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/748,367	MALONEY ET AL.	
	Examiner	Art Unit	
	DAI A. PHUONG	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *22-28* is/are allowed.

6)☒ Claim(s) *1-21 and 29-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments, filed 02/12/2008, with respect to claims (1 and 11 have been amended) have been considered but are moot in view of the new ground(s) of rejection. Claims 21-28 have been added in response filed on 07/12/2007 and Claims 29-48 have been added in response filed on 09/27/2007. Claims 1-48 are currently pending.

Claim Objections

2. Claims 1 and 11 are objected to because of the following informalities: Claims 1 and 11 recite the limitation "a MS" in line 4. It should be corrected as --the MS--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amerga et al. (Pub. No: 20020115448) in view of Maloney et al. (Pub. No.: 20030129996).

Regarding claim 1, Amerga et al. disclose a method for the determination of the location of a mobile station (MS) equipped with embedded GPS signal reception capability and equipped to operate within a wireless communications network, the method comprising:

(a) receiving GPS data at a land station, said GPS data being received from ***a*** MS to be located (fig. 1, [0032] to [0042]);

(b) at a land station equipped with location-measurement facilities, receiving a communications-band signal from said MS to be located and using the location-measurement facilities to extract location-related characteristic data from the communications-band signal (fig. 1, [0032] to [0042]); and

(c) at a land station equipped for location-determination calculations, performing location-determination calculations using the GPS data and the extracted location-related characteristic data to derive an estimated location for the MS (fig. 1, [0032] to [0042]).

However, Amerga et al. do not disclose wherein said location-related characteristic data extracted from the communications-band signal is a function of the geographic location of said MS relative to said land station equipped with location-measurement facilities.

In the same field of endeavor, Maloney et al. disclose wherein said location-related characteristic data extracted from the communications-band signal is a function of the geographic location of said MS relative to said land station equipped with location-measurement facilities (fig. 1, [0021] to [0024]. Maloney et al. disclose a mobile terminal 101 transmits a signal 102 that is received with antennas 103 serviced by a network of sensor sites or stations 104. The sensor stations are connected via "back-haul communications" links 105 to at least one central site or *control station 106 at which the time-difference or angle data collected from the sensor sites can be analyzed to provide the estimated locations and motions. With the time-related measurements, the facility for localization can be seen in the relation that a time-*

numbered 1 and 2) has to the ranges or distances between the locations of the signal receivers and the location of the signal transmitter).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wireless position determination system of Amerga et al. by specifically including wherein said location-related characteristic data extracted from the communications-band signal is a function of the geographic location of said MS relative to said land station equipped with location-measurement facilities, as taught by Maloney et al., the motivation being in order to provide efficient measures of AOAs, as well as TOAs or TDOAs, for all of the communications signal format.

Regarding claim 3, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Amerga et al. disclose a method further comprising communicating the GPS data and the extracted location-related characteristic data to said land station equipped for location-determination calculations (fig. 1, [0032] to [0042]).

Regarding claim 4, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Amerga et al. disclose a method wherein said location-related characteristic data extracted from the communications-band signal includes time of arrival Amerga.

Regarding claim 5, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Amerga et al. disclose a method wherein said location-related

characteristic data extracted from the communications-band signal includes time difference of arrival (fig. 1, [0032] to [0042]).

Regarding claim 6, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Maloney et al. disclose a method wherein said location-related characteristic data extracted from the communications-band signal includes angle of arrival (AOA) data ([0021] to [0024]).

Regarding claim 7, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Maloney et al. disclose a method wherein said location-related characteristic data extracted from the communications-band signal includes data concerning signal strength or propagation loss (PL) ([0041]).

Regarding claim 8, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Amerga et al. disclose a method wherein said location-related characteristic data extracted from the communications-band signal includes timing advance (TA) data (fig. 1, [0032] to [0042]).

Regarding claim 9, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Amerga et al. disclose a method further comprising using collateral information in performing said location-determination calculations (fig. 1, [0032] to [0042]).

Regarding claim 10, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. Further, Maloney et al. disclose a method wherein said method is

employed to achieve applicable Federal Communications Commission (FCC) accuracy requirements for emergency service ([0004]).

Regarding claim 11, this claim is rejected for the same reason as set forth in claim 1.

Regarding claim 12, this claim is rejected for the same reason as set forth in claim 3.

Regarding claim 13, this claim is rejected for the same reason as set forth in claim 4.

Regarding claim 14, this claim is rejected for the same reason as set forth in claim 5.

Regarding claim 15, this claim is rejected for the same reason as set forth in claim 6.

Regarding claim 16, this claim is rejected for the same reason as set forth in claim 7.

Regarding claim 17, this claim is rejected for the same reason as set forth in claim 8.

Regarding claim 18, this claim is rejected for the same reason as set forth in claim 9.

Regarding claim 19, this claim is rejected for the same reason as set forth in claim 10.

Regarding claim 20, this claim is rejected for the same reason as set forth in claim 2.

5. Claims 2 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amerga et al. (Pub. No: 20020115448) in view of Maloney et al. (Pub. No.: 20030129996) and further in view of Zadeh et al. (U.S. 6266533).

Regarding claim 2, the combination of Amerga et al. and Maloney et al. disclose all the limitations in claim 1. However, the combination of Amerga et al. and Maloney et al. disclose a method further comprising providing assistance data to the MS to be located, said assistance data enhancing the ability of the MS to receive GPS signals and extract TOA or pseudorange measures, wherein said TOA or pseudorange measures are then communicated to the said first land station equipped with location-measurement facilities.

In the same field of endeavor, Zadeh et al. disclose a method further comprising providing assistance data to the MS to be located, said assistance data enhancing the ability of the MS to receive GPS signals and extract TOA or pseudorange measures, wherein said TOA or pseudorange measures are then communicated to the said first land station equipped with location-measurement facilities (col. 7, lines 1-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wireless position determination system of the combination of Amerga et al. and Maloney et al. by specifically including disclose a method further comprising providing assistance data to the MS to be located, said assistance data enhancing the ability of the MS to receive GPS signals and extract TOA or pseudorange measures, wherein said TOA or pseudorange measures are then communicated to the said first land station equipped with location-measurement facilities, as taught by Zadeh et al., the motivation being in order to provide accurately and quickly positioned in a wireless communication network using range measurement assistance data, with reduced message traffic in the wireless network.

Regarding claim 21, this claim is rejected for the same reason as set forth in claim 2.

6. Claims 29-37 and 39-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amerga et al. (Pub. No: 20020115448) in view of Zadeh et al. (U.S. 6266533).

Regarding claim 29, Amerga et al. disclose method for the determination of the location of a mobile station (MS) equipped with embedded GPS signal reception capability and equipped to operate within a wireless communications network, the method comprising:

(b) at a land station equipped with location-measurement facilities, receiving a communications-band signal from said MS to be located and using the location-measurement

facilities to extract location-related characteristic data from the communications-band signal (fig. 1, [0032] to [0042]);

(c) communicating TOA or pseudorange measures and the extracted location-related characteristic data to a land station equipped for location-determination calculations; and

(d) at a land station equipped for location-determination calculations, performing location-determination calculations using the GPS data and the extracted location-related characteristic data to derive an estimated location for the MS (fig. 1, [0032] to [0042]).

However, Amerga et al. do not disclose providing assistance data to a MS to be located, said assistance data enabling the MS to receive GPS signals and extract TOA or pseudorange measures.

In the same field of endeavor, Zadeh et al. disclose providing assistance data to a MS to be located, said assistance data enabling the MS to receive GPS signals and extract TOA or pseudorange measures (col. 7, lines 1-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wireless position determination system of Zadeh et al. by specifically including providing assistance data to a MS to be located, said assistance data enabling the MS to receive GPS signals and extract TOA or pseudorange measures, as taught by Zadeh et al., the motivation being in order to provide accurately and quickly positioned in a wireless communication network using range measurement assistance data, with reduced message traffic in the wireless network.

Regarding claim 39, this claim is rejected for the same reason as set forth in claim 29.

Regarding claims 30 and 40, this claim is rejected for the same reason as set forth in claim 4.

Regarding claim 31 and 41, this claim is rejected for the same reason as set forth in claim 5.

Regarding claims 32 and 42, this claim is rejected for the same reason as set forth in claim 6.

Regarding claims 33 and 43, this claim is rejected for the same reason as set forth in claim 7.

Regarding claims 34 and 44, this claim is rejected for the same reason as set forth in claim 8.

Regarding claims 35 and 45, this claim is rejected for the same reason as set forth in claim 9.

Regarding claims 36 and 46, this claim is rejected for the same reason as set forth in claim 10.

Regarding claim 46, this claim is rejected for the same reason as set forth in claim 2.

Regarding claims 37 and 47, the combination of Amerga and Zadeh disclose all limitations in claim 29. Furthermore, Amerga et al. disclose a method wherein the wireless communications network is a GSM network, and the communications-band signal received from said MS complies with a GSM air interface specification ([0005]).

7. Claims 38 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amerga et al. (Pub. No: 20020115448) in view of Zadeh et al. (U.S. 6266533) and further in view of Fischer et al. (Pub. No: 6295455).

Regarding claims 38 and 48, the combination of Amerga and Zadeh disclose all limitations in claim 29. However, Amerga et al. do not disclose a method wherein the wireless communications network is a non-GSM network, and the communications-band signal received from said MS complies with a non-GSM air interface specification.

In the same field of endeavor, Fischer et al. disclose a method wherein the wireless communications network is a non-GSM network, and the communications-band signal received from said MS complies with a non-GSM air interface specification (col. 5, lines 28 to 64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wireless position determination system of Zadeh et al. by specifically including a method wherein the wireless communications network is a non-GSM network, and the communications-band signal received from said MS complies with a non-GSM air interface specification, as taught by Fischer et al., the motivation being in order to adapt to other mobile communication systems.

Reasons for Allowance

8. The following is an examiner's statement of reasons for allowed:

Claims 22-28 are allowed.

Claims 23-28 are dependent on claim 22.

Regarding claim 22, the prior art record does not disclose nor fairly suggest a a system for the determination of the location of a mobile station (MS) equipped with embedded GPS signal reception capability and equipped to operate within a wireless communications network based on the Global System for Mobile communications (GSM), the system comprising position-

determination equipment (PDE) including: ***a plurality of location measurement units (LMUs) each of which is embedded at a networked land station (LS) for signal detection and processing, wherein each LMU is connected to and receives signals from a GPS antenna and from wireless communications band antenna(s); a serving mobile location center (SMLC) at a central collection-and-analysis land station (LS), said SMLC being configured to assemble measurements from the LMUs and to calculate the MS location; and a location gateway (LG 206) at the central land station (LS) configured to receive location requests from a mobile positioning center (MPC) specifying the identity and serving cell assignment data for a MS of interest, said location gateway providing the PDE portal for the reception of location requests and for provision of location-determination results to the MPC; wherein the system is programmed and configured to perform the following steps: a request for the location of a particular MS of interest originating at the MPC is received at the LG, and the LG validates the authenticity and authorization for the location request, wherein a valid request identifies the serving cell and associated communications protocol parameters, including assigned frequency, that shall apply for the communications with the MS', the LG provides the request to the SMLC appropriate for the determination of locations for MSs operating in the vicinity of the serving cell; the selected SMLC receives and reviews any request to determine the list of cooperating LMUs that are optima[for supporting location requests associated with the identified serving cell; in anticipation of the need to rapidly support a request for assisting GPS data, the SMLC maintains and evaluates current GPS configuration data that specify the location and motion parameters for the GPS satellite vehicles (SVs), wherein these data are persistently monitored by the LMUs through their GPS receivers, and wherein the LMUs***

provide to the SMLC the Doppler shifts, pseudoranges, and relevant demodulated navigation message data for the GPS SV telemetry streams received at the LMU positions; the SMLC receives these GPS SV data periodically communicated from the LMUs (step 306), and for each potential serving cell, the SMLC evaluates and derives a current list that specifies the optimal SVs in potential view near the ceil site, along with the restricted domains of Doppler shift and pseudorange that are anticipated to be appropriate for assisting in an AGPS reception; and in order to exploit the availability of the up-to-date descriptions of the GPS configuration parameters to support a reduced time to first fix (TTFF) from the MS GPS receiver, the SMLC responds to a particular location request and provides the AGPS parameters appropriate for the vicinity of the serving cell site, wherein these AGPS parameters are received by the LG and are provided to the MPC to be communicated to the MS in a GPS data request.

Response to Argument

9. Applicant, on page 9 of the remark, argues that from the base stations, and communicates these times to the PDE 130. The communications from Amerga's remote terminal/MS are not disclosed as being "communications-band signals," nor are these used to extract location-related characteristic data as recited in applicants' claims. Thus, Amerga's approach is different from that recited in applicants' claims. According to applicants' claimed invention, a *land station* equipped with location-measurement facilities receives the *communications-band signals* from the MS to be located and uses the location-measurement facility *to extract location-related characteristic data.* However, the Examiner respectfully disagrees.

First, Applicant used a particular words recited in the claim, e.g. "communications-band signals". During patent examination, the pending claims must be given their broadest reasonable interpretation. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550- 51 (CCPA 1969). The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. In re Cortright, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999). See MPEP 2111.

Second, Amerga et al. disclose in paragraph 36 that remote terminal 106 measures the arrival times of the transmissions from a number of base stations 104. For a CDMA network, these arrival times can be determined from the phases of the pseudo-noise (PN) codes used by the base stations to spread the signals prior to transmission to the remote terminal. The PN phases detected by the remote terminal are then reported to PDE 130 via (e.g., IS-801) ***signaling. PDE 130 then uses the reported PN phase measurements to determine pseudo-ranges, which are then used to determine the position of the remote terminal***. It should be noted that the remote terminal communicates with the base stations via a communication channel.

In order to overcome prior arts, the Examiner suggests the Applicant explains what means "communications-band signals".

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dai A Phuong whose telephone number is 571-272-7896. The examiner can normally be reached on Monday to Friday, 9:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nguyen Duc can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Dai A Phuong/
Examiner, Art Unit 2617
Date: 04/23/2008

/Duc Nguyen/

Supervisory Patent Examiner, Art Unit 2617